



Program Analysis and Evaluation (PA&E)

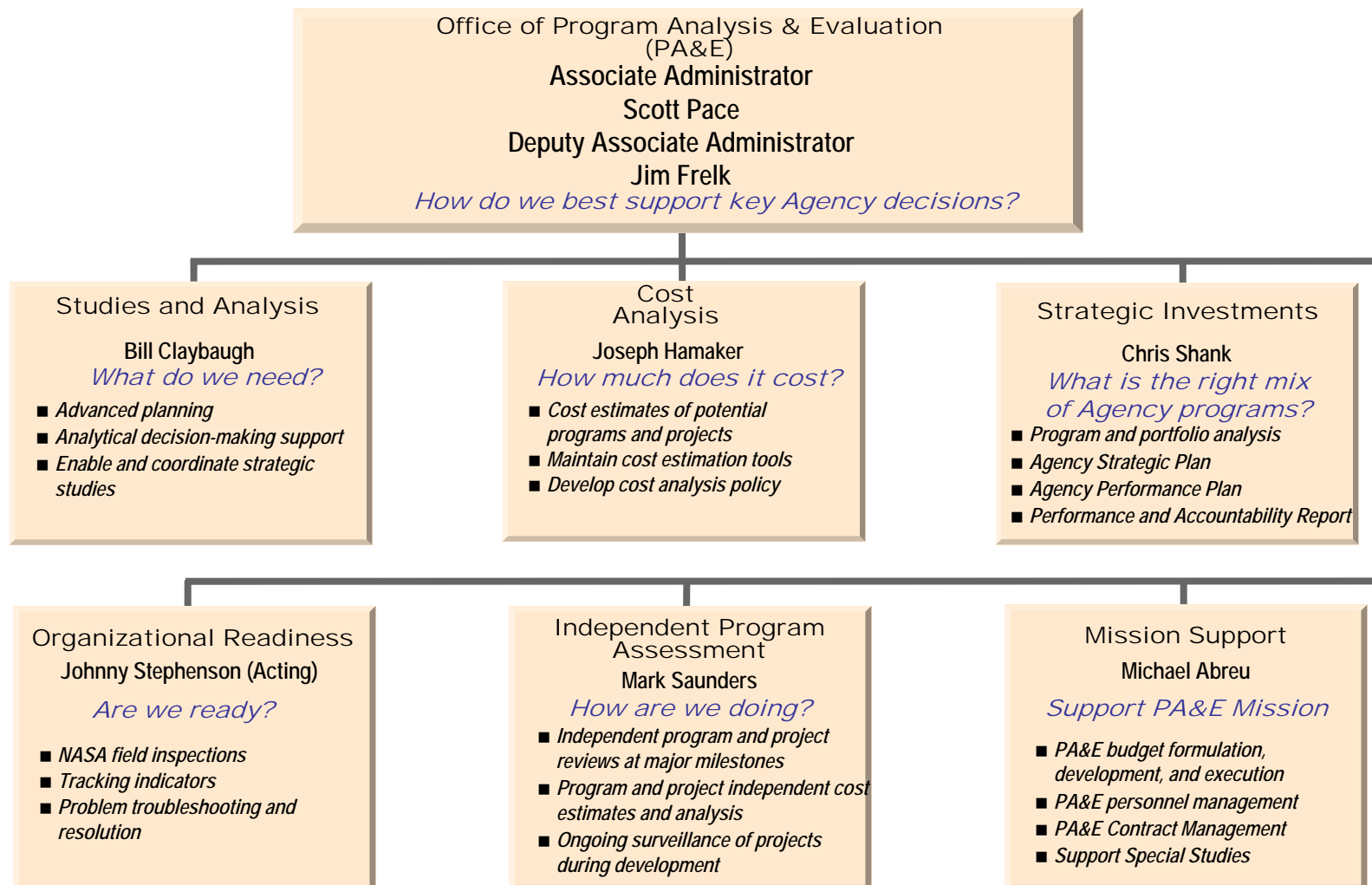
**NASA Program Management Challenge Conference
March 21-22, 2006
Galveston**

Dr. Scott Pace
Associate Administrator for Program Analysis and Evaluation



PA&E Organization

Office of Program Analysis and Evaluation





PA&E Big Picture

Office of Program Analysis and Evaluation

Top 3 strategic goals for the office:

- Establish a Planning, Programming, Budgeting and Execution System (PPBE) system as a stable, work content-driven budget process**
- Promote a culture of objective analysis in NASA senior decision-making**
- Strengthen the programmatic and institutional foundations of the VSE architecture through analysis**



PA&E Value Proposition

Office of Program Analysis and Evaluation

NASA's credibility is dependent on:

- Resources that align with NASA's strategic direction
- Delivering on our promises

PA&E provides an independent and objective source of analysis on:

- Agency strategic direction
- How NASA should invest its resources
- Whether NASA can deliver on its commitments



PA&E Strategic Objectives

Office of Program Analysis and Evaluation

- **Support a culture of objective analysis in NASA senior decision-making**
- **Strengthen the programmatic and institutional foundations of the Agency architecture through analysis**
- **Establish a Planning, Programming, Budgeting and Execution System (PPBES) as a stable, work content-driven budget process**



PA&E Studies - Ongoing Tier 1

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- Funds Distribution
 - Johnny Stephenson & Pedro Jimenez, Co-chairs
- Exploration Safety Architecture Review
 - Bill Claybaugh, Chair
- Research and Technology Portfolio Planning
 - Jay Falker, Chair
- Innovative Partnership Program Review
 - Mike Canga, Chair
- Managing VSE Recurring Costs for Sustainability
 - Bill Claybaugh & Joe Hamaker, Co-chairs
- Organizational Options for Space Communications
 - Terry Reese, Chair
- Lunar Robotic Exploration Architecture
 - Dan Mulville
- Uncovered Capacity Reduction
 - Howard Ross, Chair
- Near Earth Object Survey
 - TBD



PA&E Studies - Ongoing Tier 2

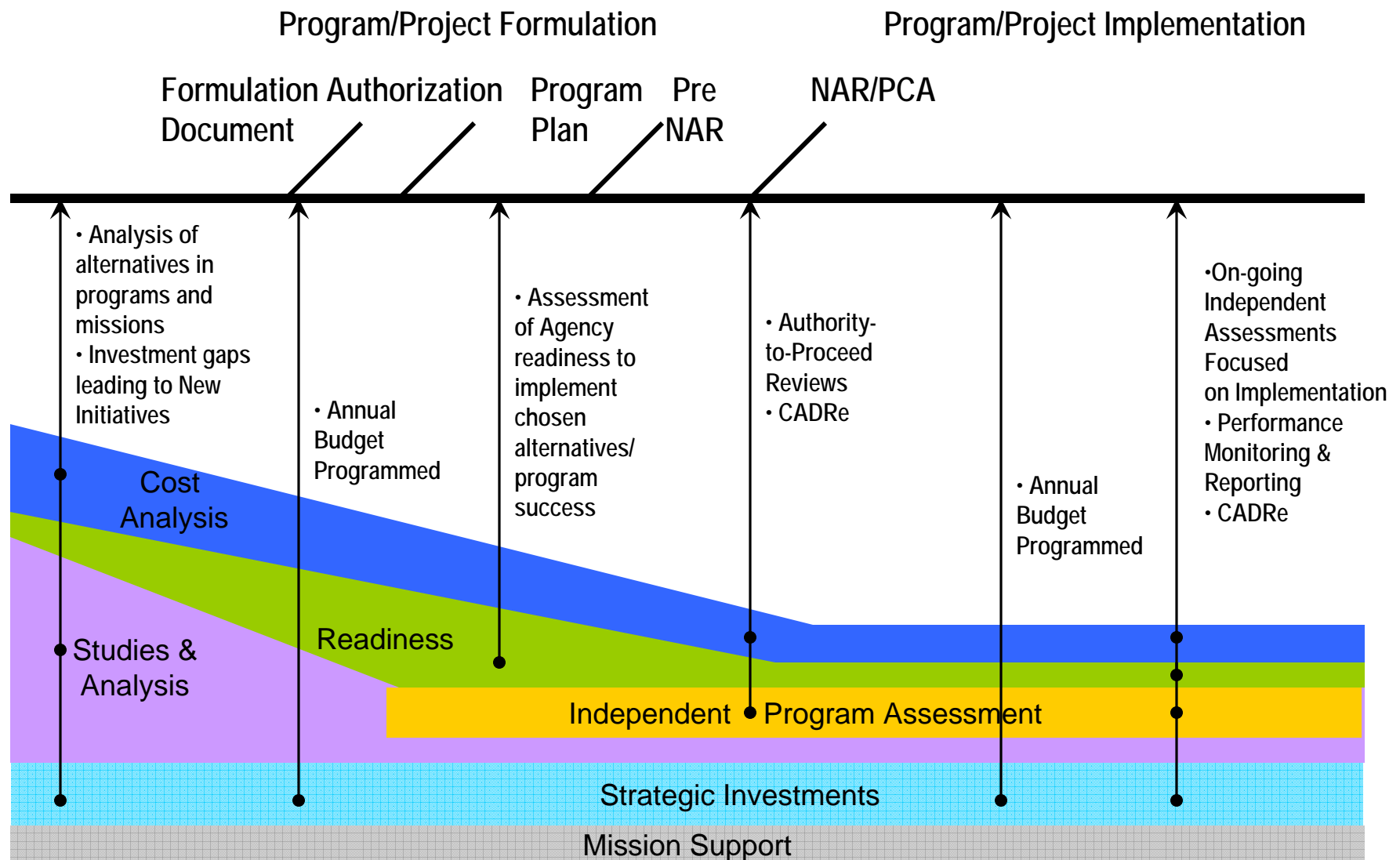
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- Nuclear R&T Portfolio Study
 - Len Dudzinski, Chair
- Long Term Agency Plan for the Verification of Large Space Telescope Observatories
 - Julie Crooke, Chair
- Exploration Safety Implementation Policy Options
 - Rod Liesveld, Chair
- Management Tools and Integration Assessment, long term study
 - Johnny Stephenson, Chair with OneNASA
- Ames/Moffett Field Ownership Study
 - Kelly Carter, Chair
- KSC Launch Operations Plans and Costs Assessment
 - Phil McAlister, Chair
- Russian Aerospace Primer Development
 - Manber, Chair
- Erasmus Requirements Study Steering Group
 - Julie Pollitt, Chair
- Benchmark Program Offices
 - Johanna Gunderson
- Agency Mission Planning Model
 - Judith Robey, Chair
- Utility Assessment of NRC Studies
 - Trish Pengra, Chair
- Readiness: Crew Exploration Vehicle at JSC
 - TBD
- Use of Metric Units in Constellation
 - Bill Claybaugh, Chair
- Case Studies in Enhanced Use Leasing at ARC and KSC
 - Trish Pengra, Chair
- Radiation Health
 - Rich Williams



PA&E in the Program/Project Lifecycle

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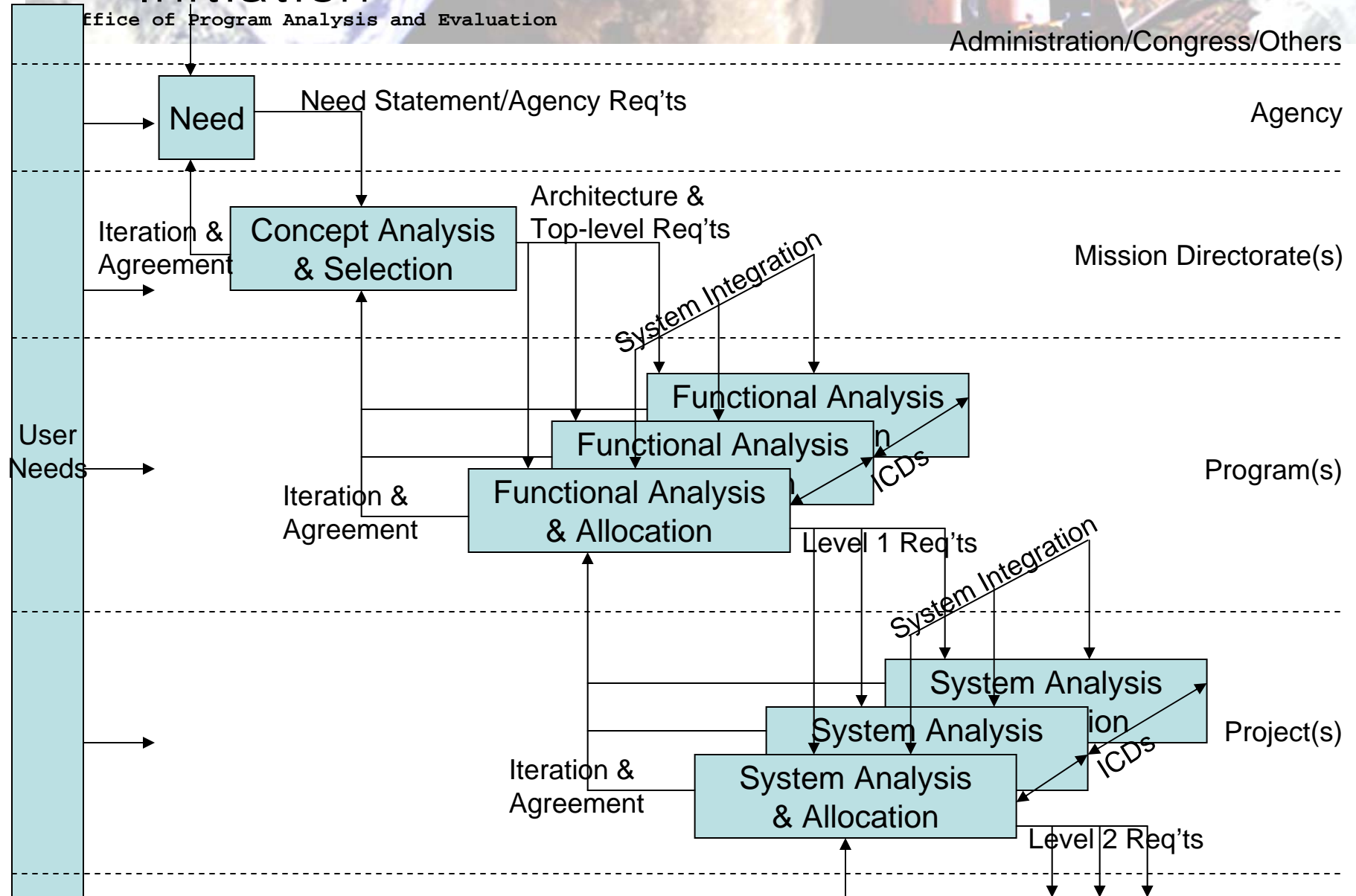




Proper Agency Program Formulation & Initiation

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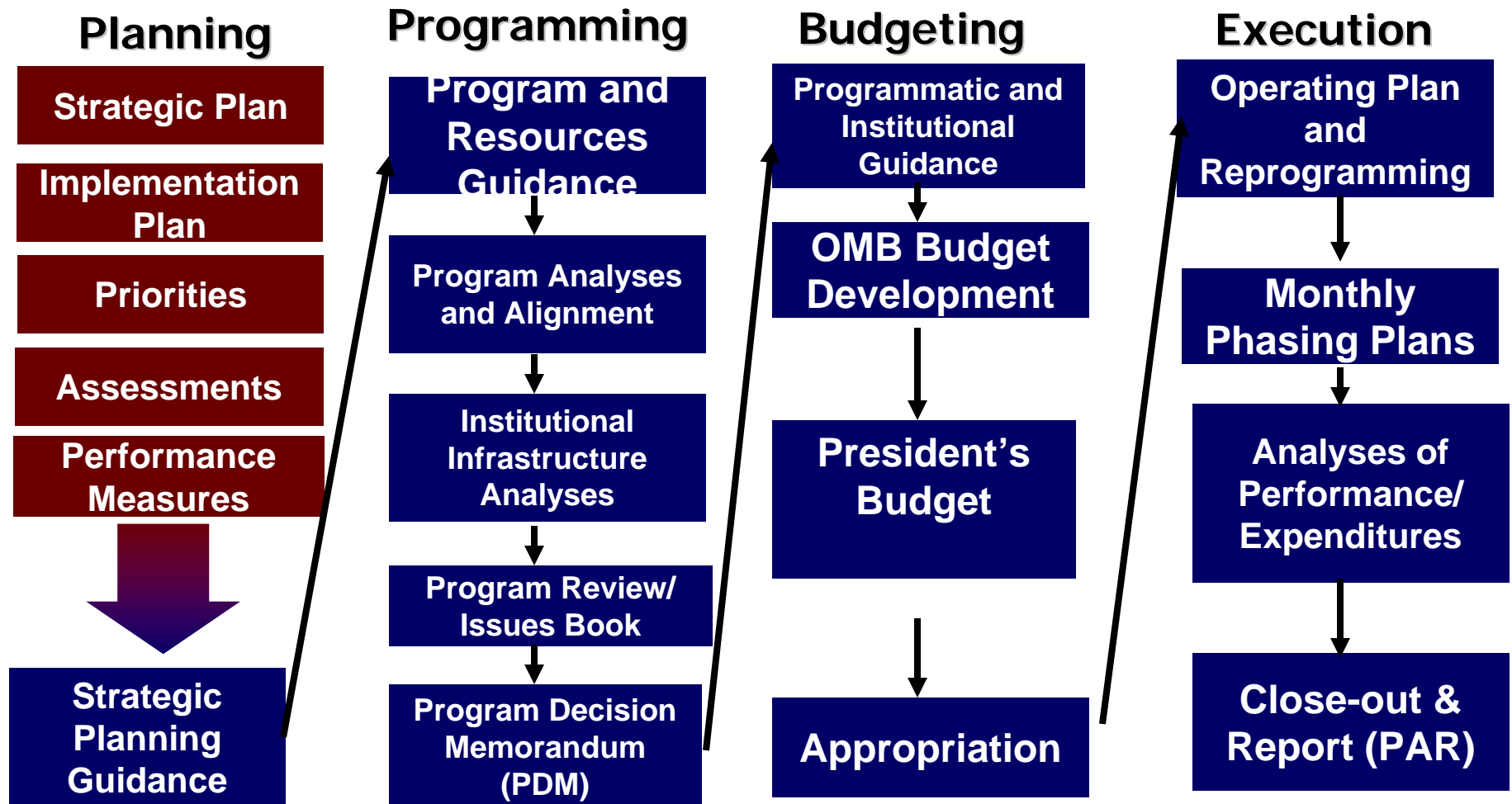
Administration/Congress/Others





High-level Agency PPBE Process

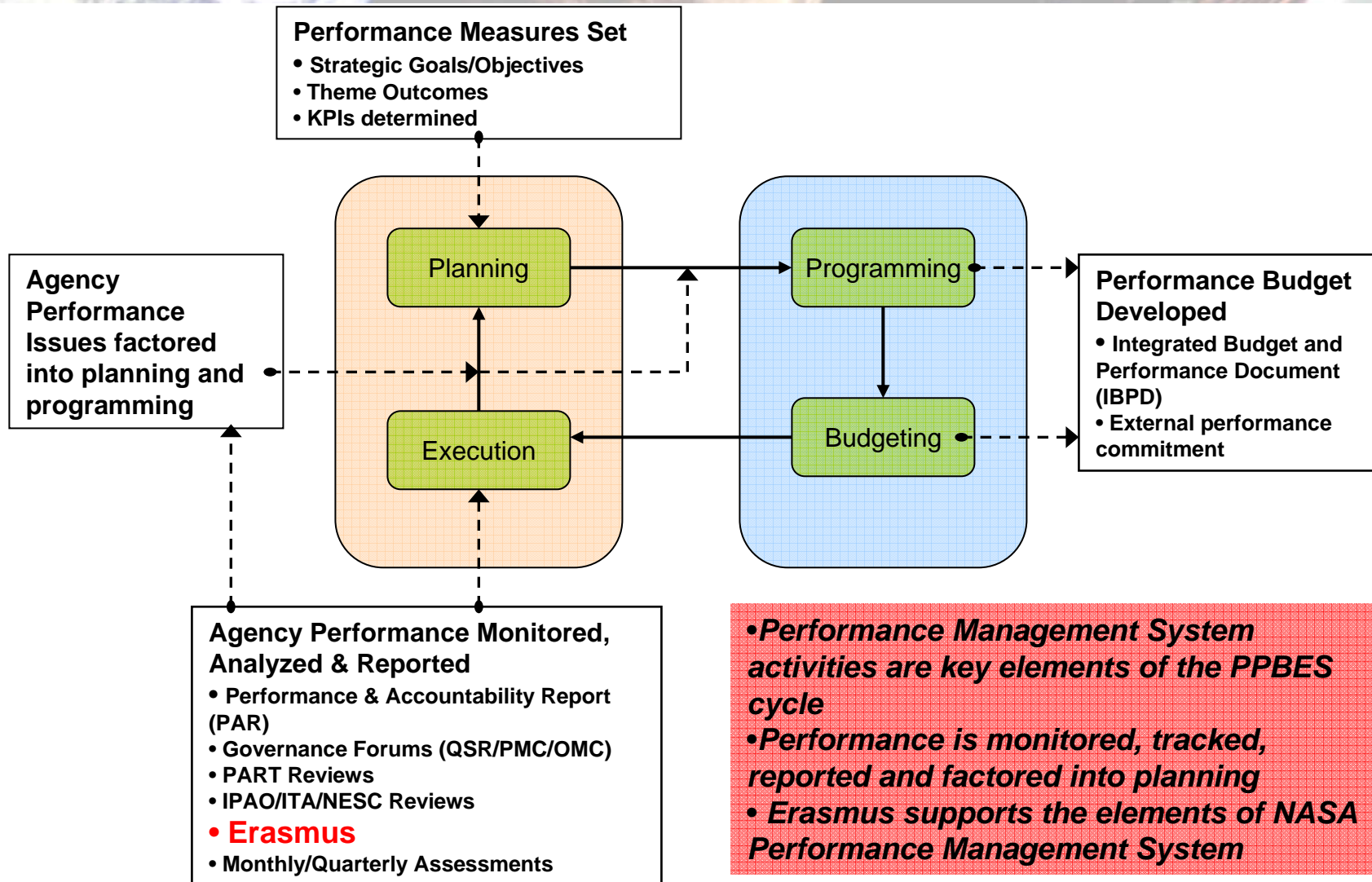
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Agency Performance in the PPBE

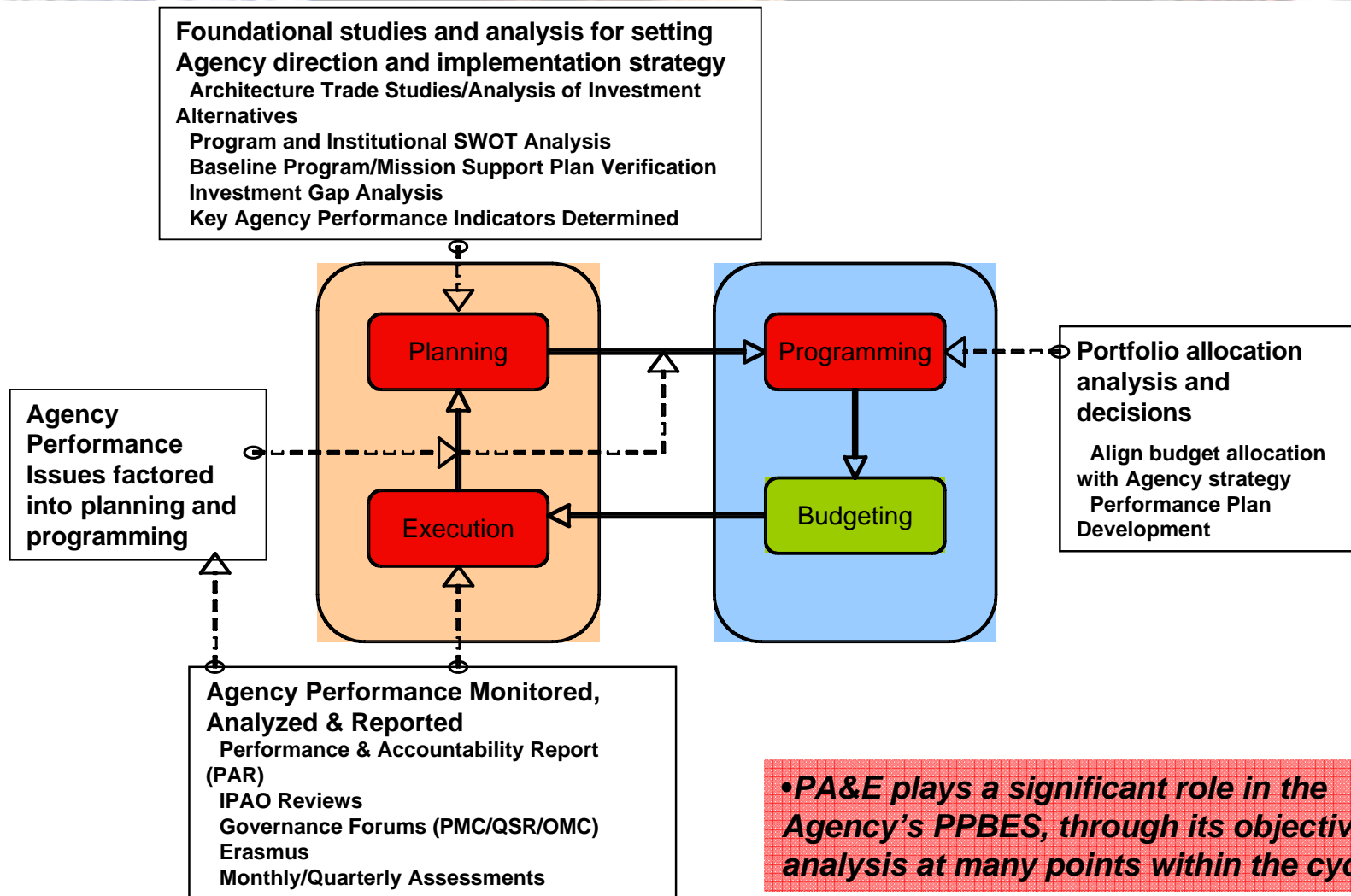
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PA&E Objective Analysis Role

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ERASMUS as a PPBE Tool

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ERASMUS

HomeMission DirectorateTheme ListCenterArchiveReport Generation

Data current as of Mon Dec 19

Erasmus Documents

Login

NASA

Aeronautics Research

962 M / 6 %

C

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FY 05: 962 M / 6 %

Exploration Systems

Office of Education

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Space Operations

Enterprise Management

Aeronautics Technology

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ASP-Human Measures & Performance

	Program/Project Background	Monthly Reports	Quarterly Reports
Summary	<div>PMC One Pager</div>	<div>Stop Light</div> <div>Current Status</div> <div>Key Accomplishments</div> <div>Issues</div>	<div>Risk Matrix</div>
Cost	<div>Program/Project Cost Commitment</div> <div>Current Funding and Cost Plan</div>	<div>Cost & OBS Report</div> <div>Reserves</div>	<div>Estimate to Complete</div>
Schedule	<div>Current Approved Baseline</div>	<div>Milestone Status</div> <div>Cost/Schedule</div>	<div>Schedule Status</div>
Technical Performance	<div>Program Objectives</div>	<div>Performance Indicators</div> <div>Quality Indicators</div>	<div>Management Discussion</div> <div>Unfinalized Contract Authorizations</div>
Human Resources	<div>Program/Project Organization</div> <div>Point of Contact</div>	<div>Civil/Service Contractor Full Time Equivalents</div>	<div>Human Capital Assessments</div>
Supporting Documents	<div>HMP Project Plan</div>		

To open supporting documents click the document name.

Agency Watchlist

<div>IEMP</div>	FY05 74 M	Enterprise Management	<div>C</div> <div>S</div> <div>T</div> <div>M</div> <div>P</div> <div>G</div> <div>G</div> <div>G</div> <div>G</div> <div>G</div>
Agency Safety	Safety and Mission Assurance		<div>ARC</div> <div>DFRC</div> <div>GRC</div> <div>GSFC</div> <div>HQ</div> <div>JPL</div> <div>JSC</div> <div>KSC</div> <div>LRC</div> <div>MSFC</div> <div>SSC</div> <div>G</div> <div>G</div> <div>G</div> <div>G</div> <div>G</div> <div>G</div> <div>R</div> <div>R</div> <div>G</div> <div>G</div>



ERASMUS Role

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- **Intended as the Agency-level Performance Information System for Decision-Making**
 - Currently is the only system at the Agency level that contains performance information on key programs/projects, themes, etc.
 - Sets the Agency-level performance metric hierarchy
 - Has Senior Executives and PA&E as the Consumers
- **Seeks to be both a dashboard and authoritative data source**
 - Draws from the existing authoritative data sources
 - Contains some information that is not held elsewhere in the Agency, i.e., stoplight charts



ERASMUS Challenges

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- **Currently unsatisfactory for performance monitoring and decision-making, due to:**
 - Labor intensity, i.e. data owners input same data into Erasmus and multiple other performance monitoring forums and systems
 - Unclear data definitions and standardization, with little guidance on these, lead to no ability for comparative analysis
 - Set-up prior to systematic approach to Agency performance measurement
 - Some measures used inappropriately
 - Missing key areas of assessment, i.e. no institutional metrics and a subset of key programmatic
 - 7120.5c was necessary but not sufficient



ERASMUS Planned Changes

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- **To address challenges and fulfill its role, changes are needed in:**
 - **Functionality**
 - Automated Data Updates
 - Report generation
 - Flexibility
 - **Content**
 - Technical
 - Programmatic
 - Financial
 - **Analytics**
 - Relate data from disparate databases (e.g. financial vs. employee) to create multi-dimensional reports
 - Trending capability
 - Improved metrics



The Cost Analysis Data Requirement (CADRe)

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- **CADRe is NASA's unique response to the need to *improve* cost estimates during formulation**
- **CADRe is a formal document that describes the *programmatic, technical, and life cycle cost information, to include cost risk*, of a project**
 - Describes changes to the project since the previous CADRe submission
 - “Configuration control” for the cost estimate
 - Feeds NASA cost estimating database for future estimating
- **Generally required 5X over the project life cycle**
 - PA&E provides expert cost estimators to PMs to build CADRes
 - Project must map cost to the CADRe Level 5 WBS
 - Requires project to collect cost from contracts and civil service against hardware product oriented WBS
 - PM signs off on CADRe submissions
- **Template available on the NASA Cost Estimating Handbook (available at ceh.nasa.gov)**



PA&E Role in Congressional Reporting Requirements

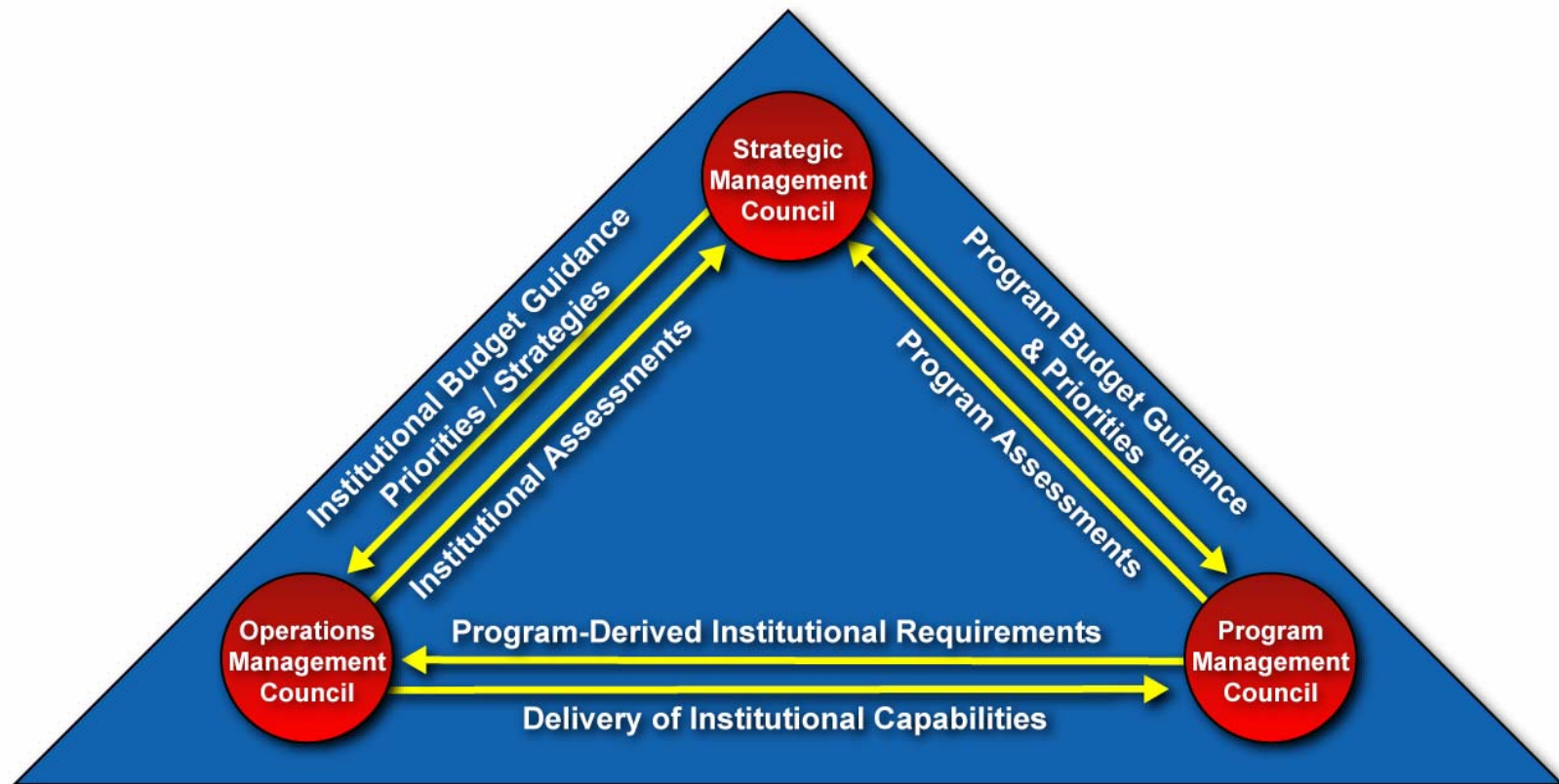
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- **PA&E will be quality control check on Authorization and Appropriations reports before they go to the Hill**
- **Taking lead on Authorization Bill's Baseline Reporting Requirements (Section 103)**
 - **Using definition of "Major Project" as defined in Bill - i.e. lifetime cost greater than \$250M and approved to proceed to implementation**
 - **Including projects that have completed the NAR, as defined in NPR 7120.5C**
 - **PA&E is developing the format for baseline reports, using the IBPD as a starting point and adding necessary information**
 - **PA&E is working closely with the Mission Directorates to populate the document; PA&E will then compile into a finalized product to be sent to Hill**



PA&E and NASA Governance

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Back-up



Why Are We Changing to PPBE?

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- **Well-defined, structured, rational process for decision-making**
- **More simplified process; decisions are made once**
- **High-level, multi-year structured analyses of alternative uses of capabilities and capacities**
- **Management focus on translating strategy into actionable programs**
- **More analytical approach to decision-making**
- **Flexibility to deal with inevitable changes**



FY2005 NASA Authorization Bill Triggers

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- **Definitions**
 - Development cost is from PDR to IOC (Phase C/D)
 - Life Cycle Cost is from PDR through end of Phase E
- **Major program is one with a life cycle cost of > \$250M**
- **Congressional notification triggers**
 - Development cost growth of 15% or...
 - 6 month slip in any major milestone
- **Notification entails...**
 - Magnitude of expected growth
 - Reasons for growth
 - Impacts to other programs/projects [siblings]
 - The revised cost and schedule if initial project requirements are held
 - The revised cost and schedule if remedial actions are taken [e.g. de-scopes]
 - An Analysis of Alternatives (AOA) with revised cost and schedule estimates
- **Project termination required at 30% cost growth unless Congress authorizes continuation by law**

2005 Bill is the first
NASA Authorization
Bill since 2001



PA&E Goals

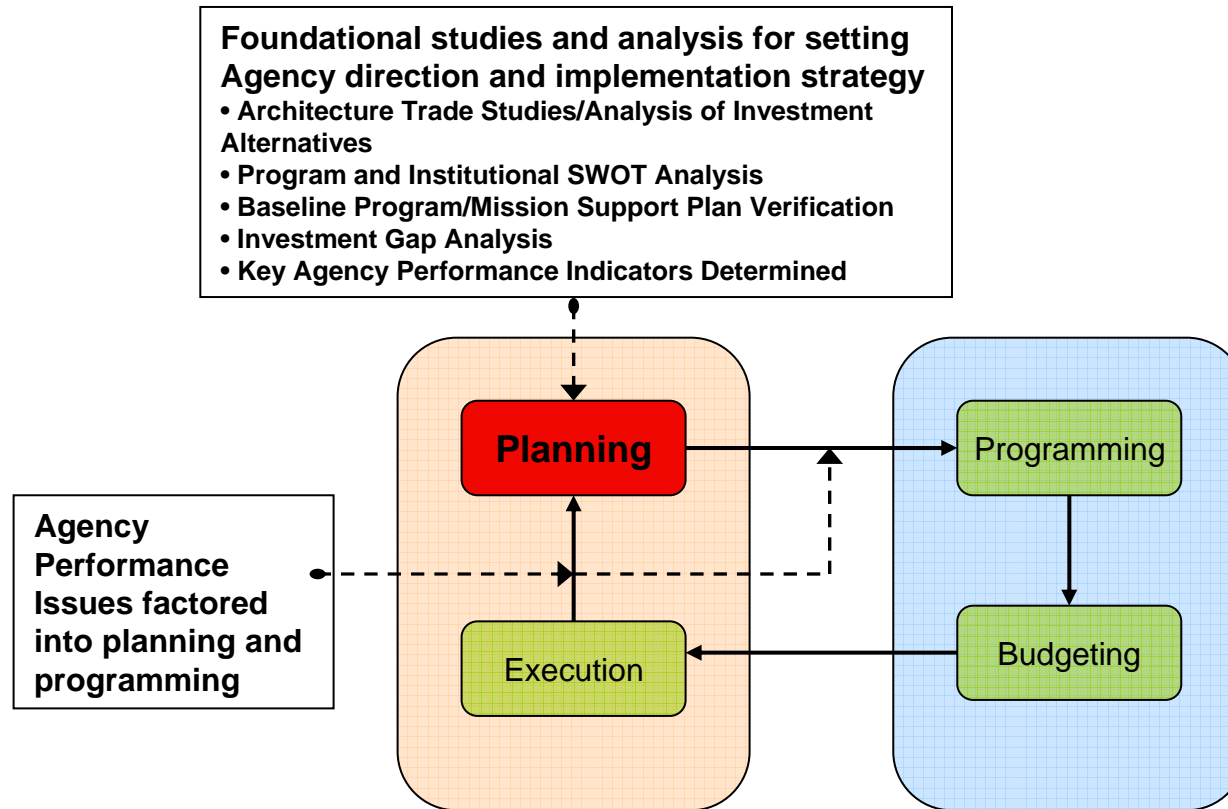
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- **Top 3 goals short-term (next 6 months to 1 year):**
 - Release FY07 budget, FY06 strategic plan and strategic budget guidance
 - Execution of Tier 1 studies and independent reviews
 - Improve project/program reviews
- **Top 3 goals mid-term (1-5 years):**
 - Implement PPBES
 - Improve cost estimation and program/institutional portfolio analysis
 - Improve agency readiness to execute the Agency Architecture (including consolidations)
- **Top 3 goals long-term (next 5-10 years):**
 - Define and baseline an affordable and sustainable Agency architecture
 - Rebalance work and infrastructures to strengthen in-house NASA capabilities across 10 healthy centers to implement the Agency Architecture
 - Ensure agency budgets and mission contents are compatible



PA&E Role in Planning Phase

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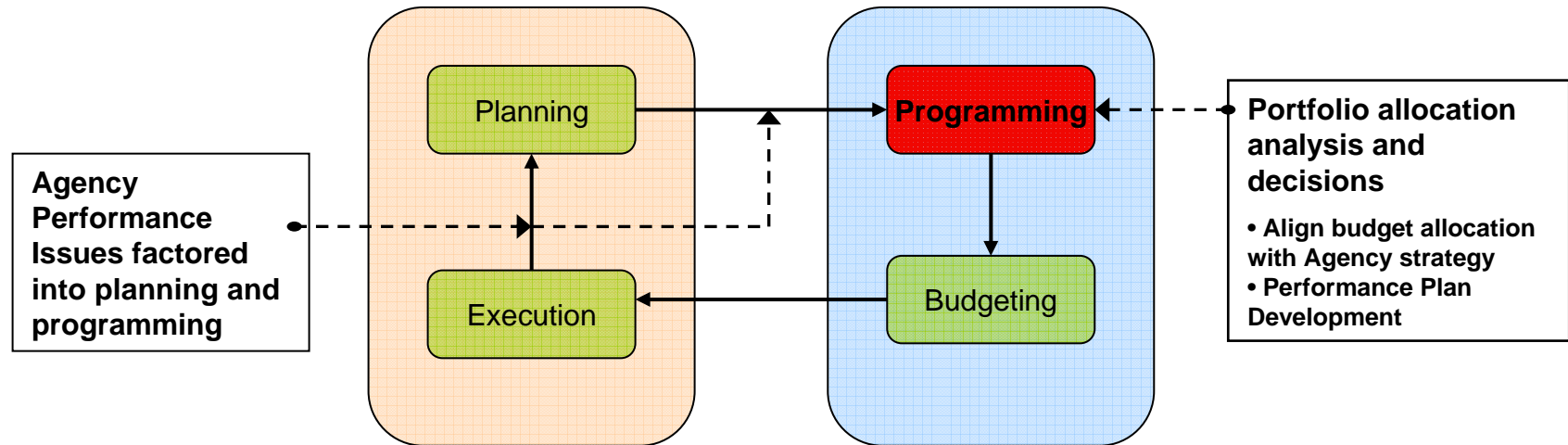
Leads the Planning phase of the PPBES process to:

- Ensure that Agency strategy fulfills policy and best interest of the Nation
- Determine Agency priorities for programs and institutional resources



PA&E Role In Programming Phase

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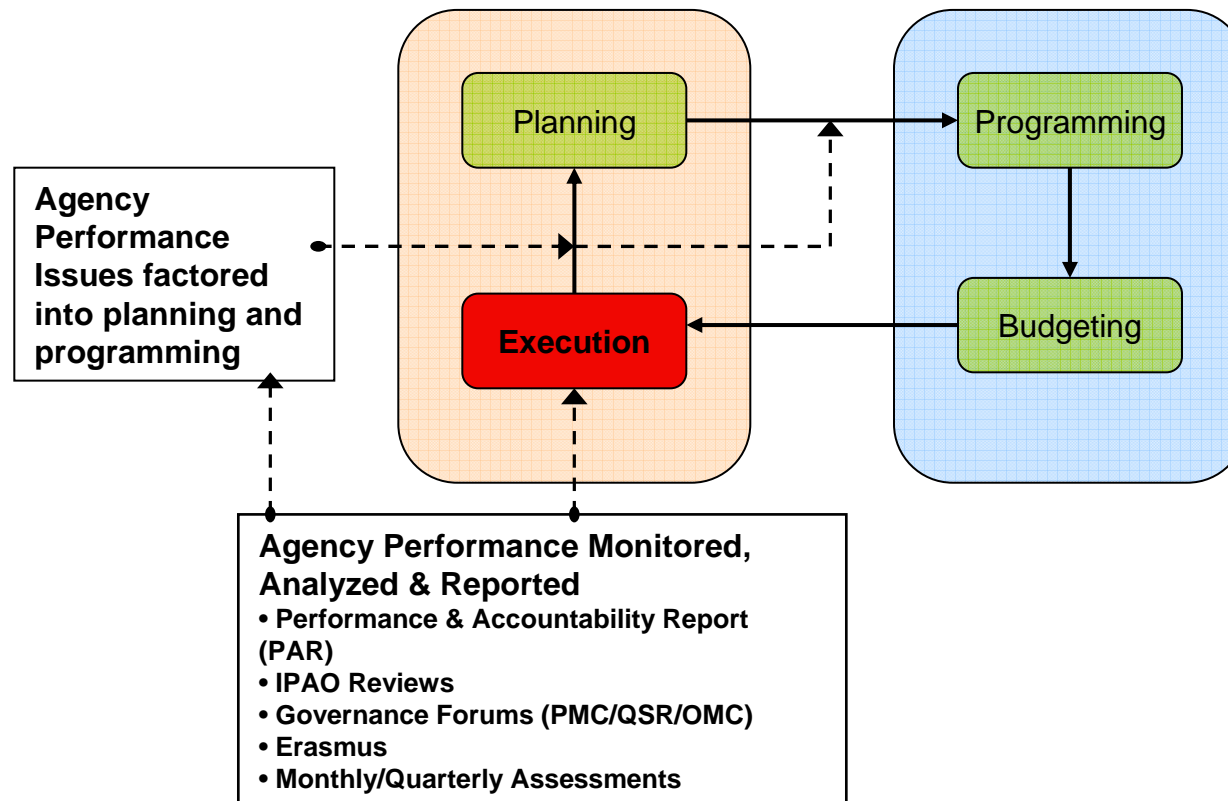
Leads the Programming phase of the PPBES process to:

- Ensure that Agency strategy is converted into implementable programs, project outcomes
- Match resources with strategic direction
- Determine new Agency initiatives
- Review/right-size Agency infrastructure to support programs
- Capture and make decisions concerning Mission Directorate and Center issues prior to the PPBE Budgeting phase



PA&E Role in Execution Phase

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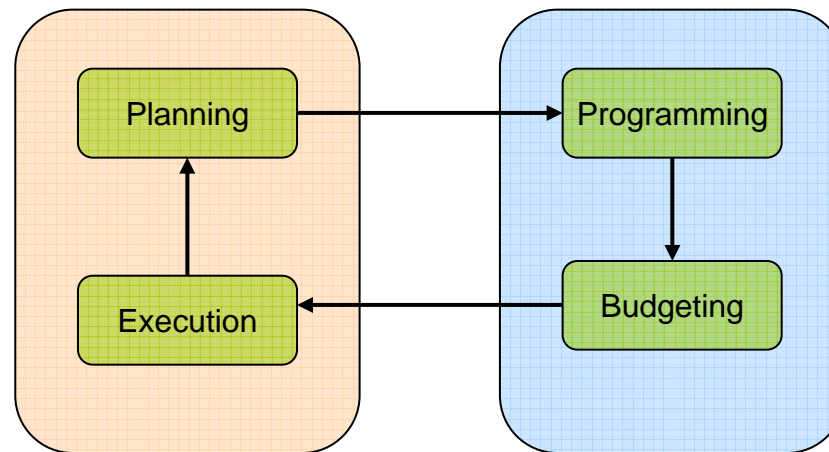
Monitors the Execution phase of the PPBES process to:

- Assure that strategy and Agency goals are being met through that execution
- Report to key stakeholders on progress toward the relevant Agency plans

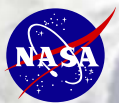


Planning, Programming, Budgeting and Execution System (PPBE) Development

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- A planning and budgeting process under development by NASA to convert strategies and priorities into programs and budgets
- A focus on “Programming” is what makes it different from other planning and budgeting processes:
 - High-level, multi-year, structured analyses of alternative uses of capabilities and capacities



Erasmus Upgrade Schedule

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